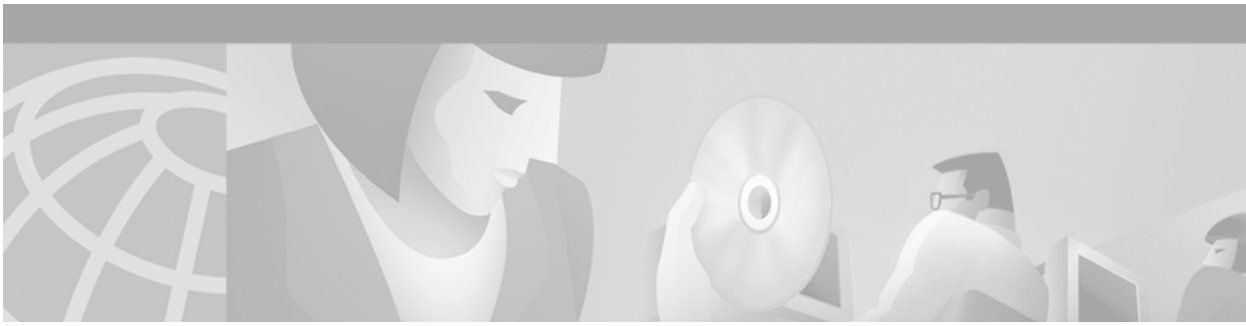

Release Notes for Cisco AS5200 Universal Access Servers for Cisco IOS Release 11.2 P

March 7, 2002

These release notes for Cisco AS5200 universal access servers support Cisco IOS Release 11.2(26) P. These release notes are updated to describe new memory requirements, hardware support, software platform deferrals, and changes to the microcode or modem code and related documents.

For a list of all the software caveats that apply to Cisco IOS Release 11.2(26) P, see *Caveats for Cisco IOS Release 11.2 P* that accompanies these release notes. The caveats document is updated for every maintenance release and is also located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 11.2* on Cisco.com and the Documentation CD-ROM.

Contents

These release notes describe the following topics:

CISCO SYSTEMS

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Introduction

The Cisco AS5200 universal access server is a multifaceted data communications platform that provides all the functions of an access server, a router, modems, and terminal adapters (TAs) in a modular chassis. Mid-sized organizations or service providers requiring centralized processing capabilities for mobile users and telecommuters will benefit the most using the Cisco AS5200 universal access server.

With its optimization for high-speed modem access, the Cisco AS5200 universal access server is ideally suited for all traditional dial-up applications, such as host access, electronic mail, file transfer, and dial-in access to a local area network.

For information on new features and Cisco IOS commands supported by Cisco IOS Release 11.2(26) P, see the "New and Changed Information" section on page 9 and the "Related Documentation" section on page 14.

System Requirements

This section describes the system requirements for Cisco IOS Release 11.2 P:

Memory Recommendations

Table 1 lists the memory recommendations for the Cisco AS5200.

Note Beginning with Cisco IOS Release 10.3, some software image sizes exceed 4 MB and, when compressed, exceed 2 MB. Also, some systems now require more than 1 MB of main system memory for data structure tables.

Table 1 Memory Recommendations for the Cisco AS5200

Image Name	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From[1]
IP	c5200-i-l	8 MB	8 MB	Flash
IP Plus[2]	c5200-is-l	8 MB	8 MB	Flash
Desktop	c5200-d-lt	8 MB	8 MB	Flash
Desktop Plus	c5200-ds-l	8 MB	8 MB	Flash
Enterprise	c5200-j-l	16 MB	8 MB	Flash
Enterprise Plus	c5200-js-l	16 MB	8 MB	Flash

1. When a system is running from Flash memory, you cannot update the system while it is running. You must use the Flash memory load helper.
2. IP Plus for the Cisco AS5200 includes protocol translation, MMP, VPDN, V.120, RMON, Managed Modems, and IBM (if IBM is not already included).

Supported Hardware

Cisco IOS Release 11.2 P supports the Cisco AS5200. Table 2 lists the interfaces and supported modem cards.

For detailed descriptions of the new hardware features, see the "New and Changed Information" section on page 9.

Table 2 Supported Interfaces for the Cisco AS5200

Modem Cards And Interfaces	Product Description
Modem Cards	56K
	V.34 Modems
	V.110 terminal adapter (TA)
	V.90 modems
Supported LAN/WAN Interfaces	Ethernet (AUI)
	EIA/TIA-232
	X.21
	V.35
	EIA/TIA-449
	EIA-530
	ISDN PRI
	E1-G.703/G.704
	Channelized T1
	Channelized E1
	Synchronous serial

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco AS5200, log in to the access server and enter the **show version** EXEC command:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 11.2 P Software (C5200-JS-N), Version 11.2(26) P, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Upgrading the Cisco IOS Software Release in Cisco Routers and Modems* located at:

http://www.cisco.com/warp/public/620/6.html

Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features.

Caution Cisco IOS images with strong encryption (including, but not limited to 168-bit [3DES] data encryption feature sets) are subject to United States government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay due to United States government regulations. When applicable, purchaser/user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

Table 3 lists the features and feature sets supported by the Cisco AS5200 in Cisco IOS Release 11.2 P and uses the following conventions:

- No—The feature is not supported in the software image.
- Basic—This feature is offered in the basic feature set.
- Plus—This feature is offered in the Plus feature set, not in the basic feature set.

Note This table might not be cumulative or list all the features in each image. You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hardcopy documents were printed. If you have a Cisco.com login account, you can find image and release information regarding features prior to Cisco IOS Release 11.2(26) P by using the Feature Navigator tool at: http://www.cisco.com/go/fn.

Table 3 Feature Sets Supported for the Cisco AS5200

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise[1]
LAN Support			
Apollo Domain	No	No	Basic
AppleTalk 1 and 2[2]	No	Basic	Basic
Banyan VINES	No	No	Basic
Concurrent routing and bridging (CRB)	Basic	Basic	Basic
DECnet IV	No	Basic	Basic
DECnet V	No	No	Basic
GRE	Basic	Basic	Basic
Integrated routing and bridging (IRB)[3]	Basic	Basic	Basic
IP	Basic	Basic	Basic
LAN extension host	Basic	Basic	Basic
Multiring	Basic	Basic	Basic
Novell IPX[4]	No	Basic	Basic

Table 3 Feature Sets Supported for the Cisco AS5200 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise[1]
OSI	No	No	Basic
Source-route bridging (SRB)	No	No	Basic
Transparent and translational bridging	Basic	Basic	Basic
XNS	No	No	Basic
WAN Services			
Combinet Packet Protocol (CPP)	Basic	Basic	Basic
Dialer profiles	Basic	Basic	Basic
Frame Relay	Basic	Basic	Basic
Frame Relay SVC Support (DTE)	No	No	Basic
Frame Relay traffic shaping	Basic	Basic	Basic
Half bridge/half router for CPP and PPP	Basic	Basic	Basic
HDLC	Basic	Basic	Basic
IPXWAN 2.0	No	Basic	Basic
ISDN[5]	Basic	Basic	Basic
Multichassis Multilink PPP (MMP)	Plus	Plus	Plus
PPP[6]	Basic	Basic	Basic
SMDS	Basic	Basic	Basic
Switched 56	Basic	Basic	Basic
Virtual Private dialup Network (VPDN)	Plus	Plus	Plus
X.25[7]	Basic	Basic	Basic
WAN Optimization			
Bandwidth-on-demand	Basic	Basic	Basic
Custom and priority queuing	Basic	Basic	Basic
Dial backup	Basic	Basic	Basic
Dial-on-demand	Basic	Basic	Basic
Header[8], link, and payload compression[9]	Basic	Basic	Basic
Snapshot routing	Basic	Basic	Basic
Weighted fair queuing	Basic	Basic	Basic
IP Routing			
BGP	Basic	Basic	Basic
BGP4[10]	Basic	Basic	Basic
EGP	Basic	Basic	Basic
Enhanced IGRP	Basic	Basic	Basic
Enhanced IGRP Optimizations	Basic	Basic	Basic
ES-IS	No	No	Basic

Table 3 Feature Sets Supported for the Cisco AS5200 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise[1]
IGRP	Basic	Basic	Basic
IS-IS	No	No	Basic
Named IP Access Control List	Basic	Basic	Basic
Network Address Translation (NAT)	Plus	Plus	Plus
NHRP	Basic	Basic	Basic
On Demand Routing (ODR)	Basic	Basic	Basic
OSPF	Basic	Basic	Basic
OSPF Not-So-Stubby-Areas (NSSA)	Basic	Basic	Basic
OSPF On Demand Circuit (RFC 1793)	Basic	Basic	Basic
PIM	Basic	Basic	Basic
Policy-based routing	Basic	Basic	Basic
RIP	Basic	Basic	Basic
RIP Version 2	Basic	Basic	Basic
Other Routing			
AURP	No	Basic	Basic
IPX RIP	No	Basic	Basic
NLSP	No	Basic	Basic
RTMP	No	Basic	Basic
SMRP	No	Basic	Basic
SRTP	No	No	Basic
Multimedia and Quality of Service			
Generic traffic shaping	Basic	Basic	Basic
Random Early Detection (RED)	Basic	Basic	Basic
Resource Reservation Protocol (RSVP)	Basic	Basic	Basic
Management			
AutoInstall	Basic	Basic	Basic
Automatic modem configuration	Basic	Basic	Basic
HTTP Server	Basic	Basic	Basic
Modem Management	Plus	Plus	Plus
RMON events and alarms[11]	Basic	Basic	Basic
RMON full	Plus	Plus	Plus
SNMP	Basic	Basic	Basic
Telnet	Basic	Basic	Basic
Security			
Access lists	Basic	Basic	Basic

Table 3 Feature Sets Supported for the Cisco AS5200 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise[1]
Access security	Basic	Basic	Basic
Extended access lists	Basic	Basic	Basic
Kerberized login	No	No	Basic
Kerberos V client support	No	No	Basic
Lock and key	Basic	Basic	Basic
MAC security for hubs	Basic	Basic	Basic
MD5 routing authentication	Basic	Basic	Basic
RADIUS	Basic	Basic	Basic
TACACS+[12]	Basic	Basic	Basic
IBM Support (optional)			
APPN (optional)[2]	No	No	No
BAN for SNA Frame Relay support	Plus	Plus	Basic
Bisync	Plus	Plus	Basic
Caching and filtering	Plus	Plus	Basic
DLSw+ [13]	Plus	Plus	Basic
Downstream PU concentration (DSPU)	Plus	Plus	Basic
Frame Relay SNA support (RFC 1490)	Plus	Plus	Basic
Native Client Interface Architecture (NCIA) Server	Plus	Plus	Basic
NetView Native Service Point	Plus	Plus	Basic
QLLC	Plus	Plus	Basic
Response Time Reporter (RTR)	Plus	Plus	Basic
SDLC integration	Plus	Plus	Basic
DLSw (RFC 1795)	Plus	Plus	Basic
SDLC transport (STUN)	Plus	Plus	Basic
SDLC-to-LAN conversion (SDLLC)	Plus	Plus	Basic
SNA and NetBIOS WAN optimization via local acknowledgment	Plus	Plus	Basic
SRB/RSRB[14]	Plus	Plus	Basic
SRT	Plus	Plus	Basic
TG/COS	No	No	Basic
TN3270	No	No	Basic

Table 3 Feature Sets Supported for the Cisco AS5200 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise[1]
Protocol Translation			
LAT	No	No	Basic
Rlogin	No	No	Basic
Remote Node[15]			
ARAP 1.0/2.0	No	Basic	Basic
Asynchronous master interfaces	Basic	Basic	Basic
ATCP	No	Basic	Basic
CPPP	Basic	Basic	Basic
CSLIP	Basic	Basic	Basic
DHCP	Basic	Basic	Basic
IP pooling	Basic	Basic	Basic
IPX and ARAP on virtual async interfaces	No	No	Basic
IPXCP	No	Basic	Basic
MacIP	No	Basic	Basic
NASI	No	Basic	Basic
NetBEUI over PPP	No	No	Basic
SLIP	Basic	Basic	Basic
Terminal Services[16]			
LAT[16]	No	No	Basic
Rlogin	Basic	Basic	Basic
Telnet	Basic	Basic	Basic
TN3270	No	No	Basic
X.25 PAD	Basic	Basic	Basic
Xremote	No	No	Basic

1. Enterprise is available with APPN in a separate feature set. APPN includes APPN Central Registration (CRR) and APPN over DLSw+.
2. This feature includes AppleTalk load balancing.
3. IRB supports IP, IPX, and AppleTalk; it is supported for transparent bridging, but not for SRB; it is supported on all media-type interfaces except X.25 and ISDN bridged interfaces; IRB and concurrent routing and bridging (CRB) cannot operate at the same time.
4. The Novell IPX feature includes SAP display by name, IPX Access Control List violation logging, and plain-English IPX access lists.
5. ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features.
6. PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, PPP compression, and Multilink PPP.
7. X.25 includes X.25 switching.
8. IPX header compression (RFC 1553) is available in the feature sets that support IPX.
9. X.25 and Frame Relay payload compression are supported.
10. BGP4 includes soft configuration, multipath support, and prefix filtering with inbound route maps.
11. The RMON events and alarms groups are supported on all interfaces. Full RMON support is available with the Plus feature sets.

12. TACACS+ Single Connection and TACACS+ SENDAUTH enhancements are supported.
13. Cisco IOS Release 11.2 introduces several DLSw+ enhancements available in the Plus, Plus 40, and Plus 56 feature sets.
14. SRB/RSRB is fast switched. This enhancement is on by default, but can be disabled.
15. Terminal services are supported on access servers (with limited support on router auxiliary ports).
16. Use of LAT requires terminal license (FR-L8-10.X= for an 8-user license or FR-L16-10.X= for a 16-user license).

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco AS5200 for Cisco IOS Release 11.2 P.

New Hardware and Software Features in Cisco IOS Release 11.2(26) P

There are no new hardware and software features supported by the Cisco AS5200 for Cisco IOS Release 11.2(26) P.

New Software Features in Cisco IOS Release 11.2(11) P through 11.2(24) P

There are no new software features supported by the Cisco AS5200 for Cisco IOS Release 11.2(11) P through Cisco IOS Release 11.2(24) P, with the exception of the following:

Bundled Modem Code for the Cisco AS5200

Bundled modem code version 3.3.20 was provided in Cisco IOS Releases 11.2(15) P and 11.2(16) P.

New Software Features in Cisco IOS Release 11.2(10) P

Modem Pooling for the Cisco AS5200

Modem pooling allows service providers to define, select, and use separate pools of modems within a single access server or router to provide different dial-in services. Modem allocation is based on the dialed number identification service (DNIS) and a predetermined number of modem ports based on DNIS.

There are a number of applications for using the call setup information, including DNIS/ANI, processing incoming call requests with CallerID, and selecting services to set up "automatically" for specified calls. These uses generally fall into two categories: those requiring allocation of a specific number of modems for a specific service, and those requiring allocation of specific physical modems.

Note For step-by-step software configuration information, refer to the online feature module *Modem Pooling for the Cisco AS5200*, which is part of the online publication *Feature Guide for Cisco IOS Release 11.2 P*. For instructions on how to reach this publication via Cisco.com or the Documentation CD-ROM, refer to the "Related Documentation" section on page 14.

Web Cache Control Protocol for the Cisco AS5200

The Web Cache Control Protocol (WCCP) feature allows you to use a Cisco Cache Engine to handle web traffic, thus reducing transmission costs and downloading time. This traffic includes user requests to view pages and graphics on World Wide Web servers, whether internal or external to your network, and the replies to those requests.

Web caches reduce transmission costs and the amount of time required to download web files. If a client requests a web page that is already cached, the request and data only have to travel between the Cisco Cache Engine and the client. Without a web cache, the request and reply must travel over the Internet or wide-area network.

Cisco IOS support of WCCP provides a transparent web cache solution. Users can benefit from web proxy caches without having to configure clients to contact a specific proxy server in order to reach web resources. Many web proxy caches require clients to reach web resources through a specific proxy web server rather than using the originally requested web server URL. With WCCP, the clients send web requests to the desired web server URL. Cisco IOS routers intelligently intercept HTTP requests and transparently redirect them to a Cisco Cache Engine.

Note For step-by-step software configuration information, refer to the online feature module *Web Cache Control Protocol*, which is part of the online publication *Cisco IOS Release 11.2(10+)P New Feature Documentation*. For instructions on how to reach this publication via Cisco.com or the Documentation CD-ROM, refer to the "Related Documentation" section on page 14.

Flash Load Helper for the Cisco AS5200

This feature enables you to upgrade the system software on run-from-Flash memory systems that have a single bank of Flash memory. It is a lower-cost software upgrade solution than dual-bank Flash memory, which requires two banks of Flash memory on one SIMM.

Flash Load Helper is an automated procedure that reloads the ROM-based image, downloads the software to Flash memory, and reboots to the system image in Flash memory. Flash Load Helper performs checks and validations to maximize the success of a Flash memory upgrade and to minimize the chance of leaving Flash memory either in an erased state or with a file that cannot boot.

Fastboot for the Cisco AS5200

This feature speeds up the boot process by using the system image directly from the system bootstrap image without accessing the boot image. To enable this feature, perform a write memory by entering the **copy running-config startup-config command** when running Cisco IOS Release 11.2(10) P or later.

Note If you run an image earlier than Cisco IOS Release 11.2(7) P or perform a write memory with Cisco IOS Releases 11.2(7) P to 11.2(9) P, the feature will automatically disable itself.

Bundled Modem Code for the Cisco AS5200

For 56K modems, bundled modem code version 3.1.30 was provided. The modem code filename is:

mcom-modem-code-3.1.30.bin

New Software Features in Cisco IOS Release 11.2(6) P through 11.2(9) P

There are no new software features supported by the Cisco AS5200 in Cisco IOS Release 11.2(6) P though Release 11.2(9) P.

New Software Features in Cisco IOS Release 11.2(5) P

The following new feature is supported by the Cisco AS5200 only and are available in Cisco IOS Release 11.2(5) P and later.

Channelized E1 Signaling for the Cisco AS5200

Cisco IOS Release 11.2(5) P and later support channel-associated signaling for channelized E1 lines, which are commonly deployed in networks in Latin America, Asia, and Europe.

After this feature is configured on a single E1 controller, up to 30 remote users can simultaneously dial in to the Cisco AS5200 through networks running the R2 protocol. Typically, all 30 channels of a channelized E1 line are used for analog calls. However, a signal converter is still needed to perform conversions between R2 signaling and ear and mouth signaling (also known as E&M). Because the Cisco AS5200 has two physical E1 ports on its dual E1 Primary Rate Interface (PRI) board, up to 60 simultaneous connections can be made through the dual E1 PRI board.

These service adapters provide high-performance, hardware-based data compression capabilities via simultaneous stacker compression data compression algorithms with independent full-duplex compression and decompression capabilities on Point-to-Point Protocol (PPP) encapsulated packets.

Note For step-by-step software configuration information, refer to the feature module *Channelized E1 Signaling for the Cisco AS5200, which is published in the Feature Guide for Cisco IOS Release 11.2 P.* For instructions on how to reach this publication via Cisco.com or the Documentation CD-ROM, refer to the "Related Documentation" section on page 14.

New Software Features in Cisco IOS Release 11.2(3) P through 11.2(4) P

There are no new software features supported by the Cisco AS5200 in Cisco IOS Release 11.2(3) P through Release 11.2(4) P.

New Features in Cisco IOS Release 11.2(1) P through 11.2(2) P

The following new features are supported by the Cisco AS5200 only and are available in Cisco IOS Release 11.2(1) P and later.

Robbed-Bit Signaling for the Cisco AS5200

Ground-start and loop-start signaling was provided for channelized T1. This new signaling is set using the **cas-group** controller configuration command.

For step-by-step software configuration information, refer to the feature module *Channelized E1 Signaling for the Cisco AS5200, which is published in the Feature Guide for Cisco IOS Release 11.2 P.* For instructions on how to reach this publication via Cisco.com or the Documentation CD-ROM, refer to the "Related Documentation" section on page 14.

Dual E1 PRI for the Cisco AS5200

A new E1 PRI card providing physical termination for two E1 PRI lines was introduced. Unlike most controller E1 configurations, the Cisco AS5200's E1 PRI controllers require a clock source, which is set with the **clock source** command.

Note For step-by-step software configuration information, refer to the feature module *Channelized E1 Signaling for the Cisco AS5200, which is published in the Feature Guide for Cisco IOS Release 11.2 P.* For instructions on how to reach this publication via Cisco.com or the Documentation CD-ROM, refer to the "Related Documentation" section on page 14.

Important Notes

The following sections contain important notes about Cisco IOS Release 11.2 P that can apply to the Cisco AS5200.

Deferral of Cisco IOS Release 11.2(26)P1, 11.2(26)P2 and 11.2(26)P3 Images

All images in Cisco IOS Release 11.2(26)P1, 11.2(26)P2 and 11.2(26)P3 have been deferred due to the following severe defect:

CSCdw78210-Related to fixes in CSCdw65903 and outlined in

http://www.cisco.com/warp/public/707/cisco-malformed-snmp-msgs-pub.shtml.

These releases have been replaced with the following software solution, which is available on CCO:11.2(26)P4.

In order to increase network availability, Cisco recommends that you upgrade affected IOS images with the suggested replacement software images. Cisco will discontinue manufacturing shipment of affected IOS images. Any pending order will be substituted by the replacement software images.

Note Please be aware that failure to upgrade the affected ios images may result in network downtime.

The terms and conditions that governed your rights and obligations and those of Cisco, with respect to the deferred images will apply to the replacement images.

Caveat CSCdr91706 and IOS HTTP Vulnerability

A defect in multiple releases of Cisco IOS software will cause a Cisco router or switch to halt and reload if the IOS HTTP service is enabled, browsing to http://router-ip/anytext?/ is attempted, and the enable password is supplied when requested. This defect can be exploited to produce a denial of service (DoS) attack.

The vulnerability, identified as Cisco caveat CSCdr91706, affects virtually all mainstream Cisco routers and switches running Cisco IOS software releases 12.0 through 12.1, inclusive. This is not the same defect as CSCdr36952.

The vulnerability has been corrected and Cisco is making fixed releases available for free to replace all affected Cisco IOS releases. Customers are urged to upgrade to releases that are not vulnerable to this defect as shown in detail below.

This vulnerability can only be exploited if the enable password is known or not set.

You are strongly encouraged to read the complete advisory, which is available at http://www.cisco.com/warp/public/707/ioshttpserverquery-pub.shtml.

Some 40-bit Encryption Images Are Unavailable

Cisco is conducting an internal review of the build and distribution processes associated with its 40-bit Cisco IOS cryptographic products. To provide seamless access to Cisco IOS 40-bit encryption capability, Cisco will provide access to the most current 40-bit encryption images, beginning with Cisco IOS Release 11.2 (12), 11.2(12)P, and 11.3(2). The following 40-bit encryption images will be indefinitely unavailable:

- 11.2(1)–11.2(11.2)
- 11.2(2)P–11.2(11.1)P
- 11.2(1)F–11.2(4)F
- 11.3(1)

This review is not related to any new or previously unreported bugs. The information gathered in the review will be used to implement new automated development and order processing applications.

Some V.110 Terminal Adapters are Unavailable

The V.110 terminal adapters are not supported in Cisco IOS Release 11.2(12) P through 11.2(15) P.

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

This section only contains open and resolved caveats for the current Cisco IOS maintenance release.

All caveats in Cisco IOS Release 11.2 are also in Cisco IOS Release 11.2 P.

For information on caveats in Cisco IOS Release 11.2 P, see *Caveats for Cisco IOS Release 11.2 P* located on Cisco.com and the Documentation CD-ROM.

Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to Cisco.com and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco IOS Bugtool Navigator II**. Another option is to go to http://www.cisco.com/support/bugtools/.

Related Documentation

The following sections describe the documentation available for the Cisco AS5200. These documents consist of hardware and software installation guides, Cisco IOS configuration and command references, system error messages, feature modules, and other documents.

Documentation is available as printed manuals or electronic documents, except for feature modules, which are available online on Cisco.com and the Documentation CD-ROM.

Use these release notes with these documents:

Release-Specific Documents

The following documents are specific to Cisco IOS Release 11.2 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 11.2*

  On Cisco.com:

  Technical Documents: Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Cross-Platform Release Notes for Cisco IOS Release 11.2:

  On the Documentation CD-ROM, click on this path:

  Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Cross-Platform Release Notes for Cisco IOS Release 11.2:

- Product bulletins, field notices, and other release-specific documents on Cisco.com:

  Technical Documents: Product Bulletins

- Caveats for Cisco IOS Release 11.2 P

  On Cisco.com:

  Technical Documents: Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Caveats for Release 11.2 P

  On the Documentation CD-ROM:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Caveats for Release 11.2 P

Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, log in to Cisco.com and click **Software Center: Cisco IOS Software: Bug Toolkit: Bug Navigator II**. Another option is to go to http://www.cisco.com/support/bugtools/.

Platform-Specific Documents

The following documents are specific to the Cisco AS5200:

- *Cisco AS5200 Universal Access Server Installation Guide*
- *Cisco AS5200 Universal Access Server Software Configuration Guide*
- *Cisco AS5200 Manager Guide*
- Port Information
- *Modem/Terminal Adapter Information*
- *Regulatory Compliance and Safety Information*
- *Documentation for Spare Parts*
- *Cisco IOS Software*
- *Cisco AS5200 Universal Access Server Quick Start Guide (with Fast Step)*

On Cisco.com:

Technical Documents: Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5200.

On the Documentation CD-ROM:

Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5200.

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 11.2 P and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference. As updates, the feature modules are available online only. Feature module information is incorporated in the next printing of the Cisco IOS documentation set.

On Cisco.com at:

Technical Documents: Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Feature Guide for Cisco IOS Release 11.2 P

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Feature Guide for Cisco IOS Release 11.2 P

Feature Navigator

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a particular set of features and which features are supported in a particular Cisco IOS image.

Feature Navigator is available 24 hours a day, 7 days a week. To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, e-mail the Contact Database Administration group at cdbadmin@cisco.com. If you do not have an account on Cisco.com, go to http://www.cisco.com/register and follow the directions to establish an account.

To use Feature Navigator, you must have a JavaScript-enabled web browser such as Netscape 3.0 or later, or Internet Explorer 4.0 or later. Internet Explorer 4.0 always has JavaScript enabled. To enable JavaScript for Netscape 3.x or Netscape 4.x, follow the instructions provided with the web browser. For JavaScript support and enabling instructions for other browsers, check with the browser vendor.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. You can access Feature Navigator at the following URL:

http://www.cisco.com/go/fn

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents that are shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of two books: a configuration guide and a corresponding command reference. Chapters in a configuration guide describe protocols, configuration tasks, Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

On Cisco.com and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Cisco IOS Release 11.2 Configuration Guide/Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Configuration Guides and Command References

Cisco IOS Release 11.2 Documentation Set Contents

Table 4 describes the contents of the Cisco IOS Release 11.2 software documentation set, which is available in electronic form and in printed form if ordered.

Note You can find the most current Cisco IOS documentation on Cisco.com and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 11.2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2

Table 4 Cisco IOS Release 11.2 Documentation Set

Books	Major Topics
• *Configuration Fundamentals Configuration Guide* • *Configuration Fundamentals Command Reference*	Configuration Fundamentals Overview Cisco IOS User Interfaces File Management Interface Configuration System Management
• *Network Protocols Configuration Guide, Part 1* • *Network Protocols Command Reference, Part 1*	IP Addressing IP Services IP Routing Protocols
• *Network Protocols Configuration Guide, Part 2* • *Network Protocols Command Reference, Part 2*	AppleTalk Novell IPX
• *Network Protocols Configuration Guide, Part 3* • *Network Protocols Command Reference, Part 3*	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
• *Wide-Area Networking Configuration Guide* • *Wide-Area Networking Command Reference*	ATM Frame Relay SMDS X.25 and LAPB
• *Security Configuration Guide* • *Security Command Reference*	AAA Security Services Security Server Protocols Traffic Filtering Network Data Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
• *Dial Solutions Configuration Guide* • *Dial Solutions Command Reference*	Dial Business Solutions and Examples Dial-In Port Setup DDR and Dial Backup Remote Node and Terminal Service Cost-Control and Large-Scale Dial Solutions VPDN

Table 4 Cisco IOS Release 11.2 Documentation Set (continued)

Books	Major Topics
• *Cisco IOS Switching Services Configuration Guide* • *Cisco IOS Switching Services Command Reference*	Switching Paths for IP Networks Fast Switching Autonomous Switching NetFlow Switching Optimum Switching Virtual LAN (VLAN) Switching and Routing Inter-Switch Link Protocol Encapsulation IEEE 802.10 Encapsulation LAN Emulation
• *Bridging and IBM Networking Configuration Guide* • *Bridging and IBM Networking Command Reference*	Transparent Bridging Source-Route Bridging Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN NCIA Client/Server Topologies IBM Channel Attach
• *Cisco IOS Software Command Summary* • *Dial Solutions Quick Configuration Guide* • *System Error Messages* • *Debug Command Reference*	

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

The most current Cisco documentation is available on the World Wide Web at http://www.cisco.com. Translated documentation can be accessed at http://www.cisco.com/public/countries_languages.shtml.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to bug-doc@cisco.com.

To submit your comments by mail, for your convenience many documents contain a response card behind the front cover. Otherwise, you can mail your comments to the following address:

Cisco Systems, Inc.
Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

http://www.cisco.com

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

http://www.cisco.com/tac

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

http://www.cisco.com/register/

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

http://www.cisco.com/tac/caseopen

Contacting TAC by Telephone

If you have a priority level 1(P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

This document is to be used in conjunction with the documents listed in the "Related Documentation" section on page 14.